Report

Terms of Reference Articulating Roles and Formulating Guidelines for the Management of Shared Watercourse Systems

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Report

Terms of Reference Articulating Roles and Formulating Guidelines for the Management of Shared Watercourse Systems

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1. Purpose, Background and Regional Setting

1.1 Purpose

The purpose of this Terms of Reference is to facilitate the implementation of the Protocol on Shared Watercourse Systems (the Protocol) of the Southern African Development Community (SADC). The focus is on articulating institutional and organizational roles among those groups responsible for implementation of the Protocol and on the development of guidelines for management of shared watercourse systems region-wide that will assist the SADC countries in promoting drainage basin level planning and management.

1.2 Background

1.2.1 SADC Water Resources

The SADC region is estimated to cover approximately 8 million square kilometers. Seventy percent of the region's surface waters are in watersheds that are part of two or more countries.[1] The area encompasses 15 shared drainage basins, including the Zambezi, Orange, Okavango, Ruvuma, Pungue, Buzi, Save, Limpopo, Incomati, Umbeluzi, Maputo, Cunene, Cuvelai, Congo (formerly Zaire); and the Nile[2]. Population is estimated at approximately one hundred and eighty million people, which is expected to double in the next 25 years. Population densities of the region range from a low of 1.8 people/per square mile in Namibia to a high of 78 people/per square mile in Malawi.

Although large areas of southern Africa are arid or semi-arid, approximately thirteen percent of the region is made up of freshwater ecosystems. Much of the region's rural population is concentrated in the vicinity of these lakes, rivers and wetlands. As much as ten percent of the central region of southern Africa are wetlands which are important grazing areas, and their productive soils are often cultivated in the dry season.

Southern Africa has some of Africa's most important and pristine wetlands in the world, such as the Okavango Delta in Botswana (newly designated a Wetland of International Importance under the Ramsar Convention, claiming the title of the world's largest Ramsar site), the Bangweulu Swamps in Zambia, the Malagarasi and Utengule swamps in Tanzania, and the Elephant marshes. The upland plateaux of Zambia, Tanzania, Malawi, and Zimbabwe are also characterized by dambos (headwater swamps), which support both traditional agriculture and wildlife. The riverine ecosystems associated with all the major perennial rivers are also important aquatic environments, as are the ephemeral systems. The Okavango and Chobe river areas in Botswana are the richest floral areas in southern Africa. Lakes Tanganyika and Malawi have high fish diversity with many endemic species. Floodplains along rivers are also very important

[1] SADC Water Sector Coordinating Unit. Draft Project Proposal for the Implementation of the SADC Protocol on Shared Watercourses

[2] Not all riparian states of the Nile River Basin are members of SADC.

ecosystems in southern Africa; the regular flooding provides fish habitat, grazing for wildlife and stock, and the basis for floodplain agriculture, such as the molapo in Botswana. The Rufiji Basin in Tanzania contains three important floodplains: the Kilombero, Usanga, and Rufiji. Zimbabwe's largest floodplains, Mana Pools, is on the Zambezi between Kariba Dam and Mpata gorge. Major floodplains in Zambia include the Lukanga Swamp on the Kafue River, the Kafue Flats, and the Luapula floodplain. In Namibia, the Cuvelai River flows from Angola into a flat terrain and flooded soils to form oshanas–important ecosystems in that region. Other important floodplains in the region include: those of the Angolan coastal rivers, and those associated with the Okavango/Cubango River. Estuaries are also important aquatic ecosystems and are widely distributed along the coast. Major estuaries are found at the mouths of the Zambezi, Rufiji, Orange, Cuanza, and Congo Rivers.

Many of the wetlands and river systems in the region are now threatened by water development schemes, overgrazing and deforestation, unregulated development and pollutant discharges. These environmental impacts have direct impact consequences for water quality and supply, fisheries, biodiversity, and for tourism earnings and agricultural productivity. In the SADC region, tourism receipts rose by 14.8 percent to US$1.8 billion in 1994 over the 1991 figures. Tourism has been an important source of growth for the regional economy in the last three decades and much of this tourism is water-based and virtually all of it is water-dependent. The rivers, lakes, wetlands, and national parks in the region that support this tourism are dependent on adequate and clean flows of water. For example, in Malawi, water based tourism is the country's largest earner of foreign exchange. Zambia and Zimbabwe host hundreds of thousands of tourists each year who visit Victoria Falls and Lake Kariba. The Okavango Delta and the Chobe River in Botswana are also major tourist destinations in the region.

The large lakes and floodplains are the source of productive and economically important fisheries. Estimates indicate that freshwater fish production in Tanzania and Malawi could be expanded from the present level of 300,000 tons/year to exceed 500,000 tons/year. Angola, Botswana and Mozambique also have the potential to sharply increase their fish production. The Okavango Delta in Botswana is an internationally recognized wetland that is fed by water from three countries, and serves a diverse range of ecological and human uses.

Although the water resources of the region are vast, the supply of and demand for water is unevenly distributed. Water demand is expected to at least double over the next 25 years, and anxieties are growing with the prospect of water shortages. South Africa, Botswana and Namibia could be facing chronic shortages of water within the near-term, and the projected demand in South Africa for water in 2020 exceeds the total water resources available. Swaziland, Malawi and Zimbabwe will face similar shortages through the year 2030. On the other hand, water availability in Angola, Tanzania, and Zambia is likely to exceed projected demand by a wide margin in the year 2020.[3]

The efficient and equitable management of water resources in the SADC region is a major challenge to be addressed and will require regional cooperation. Some 70 percent of water

[3] International Resources Group. *Capitalizing on Regional Dynamics in Southern Africa*, Prepared under Subcontract to Management Systems International, Implementing Policy Change Contract for the United States Agency for International Development Regional Center for Southern Africa (USAID/RCSA), Gaborone Botswana. April 1997, p. 10.

consumed in the region is used for irrigation, and agricultural water demand will continue to increase sharply as efforts are made to increase food production.

Energy consumption is also increasing as the region's economies expand. Some estimate that the continent of Africa holds forty percent of the world's hydropower generation potential,[4] and increased demand for water management structures to produce electricity is a likely outcome. While the known exploitable hydroelectric potential of the region is significantly higher than the current generating capacity, the region produces inadequate levels of energy.[5] [6]

While the potential for hydroelectric power generation remains largely untapped, major segments of the southern African population rely heavily on traditional fuels, which have potential for significant health and environmental impacts. In 1993, traditional fuels as a percentage of total fuel consumption ranged from 90 to 100 percent in Botswana, Lesotho, Malawi, Mozambique, Swaziland, and Tanzania. Making use of the region's untapped hydroelectric power potential could provide an avenue for shifting to cleaner household fuels. There would also be benefits in terms of greenhouse gas emission reductions supporting efforts to control global climate change. The potential tradeoffs associated with this shift could be part of the regional dialogue on management of shared watercourses. The capacity in the region, however, to comprehensively assess the benefits and costs of large hydropower schemes is extremely limited.

The resolution of potential conflicts between irrigation, hydropower, industrial, municipal and environmental uses of international watercourses will not be achieved solely by working at the national level. A recent study of the region's most important natural resources management challenges indicated that "at present, a number of development projects and country-level objectives are premised on mutually-exclusive claims for water from river basins that cross several country borders."[7] Equitable and efficient management of the region's valuable water resources will be essential for preservation of natural resources and the environment, ensuring food security, alleviating poverty, and promoting economic development. Given the uneven distribution of the supply and demand of water resources, balancing competing demands for water must be a high regional priority.

1.2.2 Benefits of Regional Cooperation in the Management of Shared Watercourses

The protection and management of international watercourses are best accomplished within a regional framework organized at the river basin level and perhaps incorporating multiple basins on a regional basis. Such regional cooperation: (1) creates institutional mechanisms that can afford greater protection to shared resources; (2) allows for greater economic efficiency; (3) shortens the learning curve with regard to best management practices; and (4) increases

[4] Microsoft Encarta 97 Encyclopedia; Africa; Drainage.

[5] IRG, ibid; p. 15.

[6] Zambia has a hydropower production potential of approximately 300,000 megawatts, yet only has an installed generating capacity of 2250 megawatts. Angola has an exploitable hydropower generating potential of 100,000 megawatts, but its current capacity is only 322 megawatts. Zimbabwe has a 700 megawatt generating capacity, while its potential is 20,000 megawatts. Namibia's current generating capacity of 250 megawatts is only twenty-five percent of its potential of 1100 megawatts. Consumption data from World Resources Institute, *World Resources* 1996-97, p. 286; energy import data from World Bank, *World Development Report* 1996, p. 202; hydroelectric data from *RCSA Statistical Atlas*, 1996, Table 53.

[7] IRG, ibid; p.21.

opportunities for continued international dialogue, reducing the potential for political conflict over water resources. An integrated river basin management approach to dealing with the issues of shared watercourses in which all potential water uses are considered and balanced allows for a comprehensive planning and implementation perspective on the resource where international borders are not strongly emphasized. The results are often more cohesive management approaches that maximize the benefits to all riparian states.

Through such regional cooperation, a sustainable development pattern can be promoted. With economic integration among the countries of southern Africa, the concept of "virtual water" has emerged, which involves the trade of food rather than transfer of water. This allows countries with abundant supplies of water to export food to water scarce countries in exchange for other commodities. Water scarce countries, in turn, reduce water consumption while retaining domestic product. For example, it has been proposed that South Africa could reduce its use of water for irrigated agriculture in domestic food production through irrigation of much smaller tracts of land for production of high-value export commodities. It could then import food for domestic consumption from neighboring countries with a greater comparative advantage in primary food production.[8]

Through improving international regional dialogue and opportunities to share "lessons-learned," regional cooperation in water resources management can shorten the learning curve for adoption of best management practices for natural resources. This otherwise tends to be slow and lengthy, if government leaders and decision-makers are not informed about promising areas of policy and institutional reforms likely to be needed at the national level to establish the enabling conditions for widespread adoption of improved resources management practices.[9] Regional sharing of lessons-learned can accelerate the learning process, and assist countries to move more rapidly up the policy development and adoption curves.

Many predict that water will replace land as the basis for security in coming years due to increasing demands for water worldwide. One of the most important reasons for regional cooperation in the management of shared watercourses is to reduce the potential for international conflict over this precious resource. The potential for conflict is particularly acute in the arid- and semi-arid regions that encompass 40 percent of the land mass but receive only 2 percent of global runoff. Estimates indicate that several areas around the world have especially high potential for conflicts over water, including: the Jordan River, shared among Jordan, Israel, the West Bank and Syria; the Nile, shared among Tanzania, the Democratic Republic of the Congo, Egypt, Sudan, Ethiopia, Burundi, Kenya, Rwanda, Uganda, and Eritrea; and the Tigress and Euphrates, shared among Turkey, Iraq and Syria. Though peaceful relations exist among all SADC member states with respect to the management of shared water resources, it is in their interest to develop institutions for the discussion and resolution of potential water conflicts. Single country management alone without effective cooperation among riparian nations will not resolve the water puzzle.

[8] IRG, ibid; p. 25.

[9] IRG, ibid; p. 46

1.3 The Region's Institutional Setting

African Frontline States established the Southern African Development Coordination Conference (SADCC) in 1980 to advance regional cooperation. In 1992, the SADCC evolved into the Southern African Development Community (SADC) to bring economic prosperity, development, and stability through regional trade liberalization and political and economic integration. Its purpose is to provide a focal point for coordinated development of the countries of southern Africa. Member countries include: Angola; the Republic of Botswana; the Democratic Republic of Congo; the Kingdom of Lesotho; the Republic of Malawi; Mauritius; the Republic of Mozambique; the Republic of Namibia; Seychelles; the Republic of South Africa; the Kingdom of Swaziland; the United Republic of Tanzania; the Republic of Zambia; and the Republic of Zimbabwe.

SADC has negotiated three regional protocols in key areas of cooperation covering: trade; power pooling; and water resources. The SADC system comprises nineteen sectors and sub-sectors charged with the responsibility of coordinating regional activities and providing regional leadership in respective areas. The SADC Secretariat is located in Gaborone, Botswana and sector coordination units and commissions are distributed among the member countries. The country hosting a particular sector unit is responsible for its core funding.

The Protocol on Shared Watercourse Systems was signed in 1995. Signatories to the agreement include: Angola; Botswana; Lesotho; Malawi; Mozambique; Namibia; South Africa; Swaziland; Tanzania; Zambia; and Zimbabwe. Since 1995, Mauritius, Seychelles, and the Democratic Republic of the Congo have joined SADC, and as a result have acceded to the Protocol. While the Protocol has been agreed to by the governments of signatory countries (and has now come into effect with two-thirds of the signatories' ratification), much is needed to ensure it gains acceptance at the lower levels of government within each region.

Further, the Protocol is now under amendment, a process that began in April 1998. The proposed changes will bring it into a closer fit with the United Nation's Convention on the Law of the Non-navigational Use of International Watercourses, and will accommodate other adjustments requested by the signatories.

After the Protocol was signed, SADC added the Water Sector to its portfolio of topic areas to upgrade collaboration on water resources management issues in the region. The four main functions of those assigned to work on the SADC Water Sector are to: (a) coordinate research and development; (b) facilitate integrated planning and management and equitable utilization; (c) monitor and implement the Protocol and assist in resolving conflicts; and, (d) identify and facilitate preparation of regional water resource projects and programs.

The Water Sector Coordination Unit (WSCU) was established in 1996 to carry out these functions. The Unit is located in the Ministry of Natural Resources in Maseru, and is funded by the Kingdom of Lesotho. The WSCU's vision is to attain sustainable, integrated planning, development, utilization and management of water resources that contribute to attainment of SADC's overall objective of an integrated economy based on balance, equity and mutual benefit for all member states. The WSCU's objective is to promote cooperation in all water matters for sustainable and equitable development as a means of improving quality of life. The SADC Water Unit's four program areas cover: (1) water supply; (2) hydrology; (3) geohydrology

(groundwater); and (4) aquatic weeds and water quality. The Terms of Reference for the Water Sector Coordination Unit specify an institutional framework for regional water sector coordination. This framework includes four groups:

1) ***Ministerial***—Sectoral Committee of Water Ministers;

2) ***Senior Officials***—Sectoral Committee of Senior Officials/Sectoral Contact Points—comprised of the Permanent Secretaries/National Directors or equivalent officials responsible for water resources of member states;

3) ***Technical Staff***—Water Sector Coordination Unit which is established at the Ministry of Natural Resources of the Kingdom of Lesotho; and

4) ***Technical Direction and Guidance***—Water Resources Technical Committee (WRTC)—comprised of directors and senior officials with technical water resource backgrounds.

The WRTC meets two times a year to consider activities to be forwarded to the Committee of Senior Officials which meets once a year in May, and which are then forwarded to the Sectoral Committee of Water Ministers which meets once a year in June.

1.4 The SADC Protocol on Management of Shared Watercourse Systems

The SADC Protocol on Shared Watercourse Systems covers all uses of surface water including agricultural, domestic, industrial, and navigational. It follows principles laid out in international rules and conventions and is premised on the effort to maintain a balance between development needs in the national interest of member countries and the needs for conservation and sustainable development. It aims to achieve and maintain close cooperation between member countries.

In signing the Protocol, member countries agreed to use shared watercourses in an equitable manner and to maintain optimal uses of shared waters. Elements of the Protocol include provisions for member states to: (1) issue discharge permits for emissions to shared waters that originate inside their countries to ensure they do no harm to downstream states; (2) notify other states of emergency situations originating within their borders that can have adverse impacts on downstream states; and (3) maintain and protect systems to prevent pollution or environmental degradation and to ensure that watercourse systems are used for peaceful purposes.

The Protocol calls for establishment of a system of river basin management institutions to facilitate regional cooperation and collaboration as well as basin-level and national-level implementation. The organizational framework for these institutions includes:

- Monitoring[10] Unit at SADC Water Sector Coordination Unit,
- River basin commissions comprising the riparian states of each drainage basin; and
- River authorities or boards at the national-level in each drainage basin.

[10]The term "monitoring" refers to implementation rather than water quality and water use monitoring.

The objectives of the basin management institutions are to: develop an implementation monitoring policy for shared watercourse systems, formulate strategies for development, and monitor execution of integrated water resources development. In carrying out these objectives, the river basin management institutions are to:

- provide recommendations to riparian countries to enable them to harmonize national laws and policies;
- assist member states in the collection and analysis of data, review national development plans, design and conduct studies for environmentally sound development and management, and stimulate public awareness;
- recommend regulation of flow and drainage;
- promote flood and drought mitigation;
- recommend management measures;
- monitor water usage;
- promote pollution prevention;
- establish a list of substances that should be controlled;
- promote environmental impact assessment;
- promote assessment of effects of navigation on environmental quality; and
- promote hydrometerological programs in consultation with SADC.

While the Protocol provides a list of required activities to be undertaken, it does not clearly specify which of the three river basin management institutions are responsible for each activity.

A river basin commission has been organized for the Okavango basin (OKACOM) and another is under final discussion for the Zambezi (ZAMCOM). The OKACOM, which includes members from Angola, Namibia, and Botswana, has initiated the development of an integrated basin management plan. A basin management commission for the Orange River Basin is also in discussion.

The institutional framework and the general principles of the Protocol are in most respects progressive by international standards. As noted, its current provisions are consistent with international norms, and the amendments under consideration would bring the Protocol even more closely into harmony with the UN Convention and other such international agreements. The signatory countries fully recognize the value of water resources and their importance to economic development, political stability, and the well-being of the region's peoples. The Protocol emphasizes fairness and equity with regard to its implementation, and most assuredly

these issues will be the focal point of efforts to establish institutional arrangements, covering basin planning, management, public participation and dispute resolution.

Table 1: Characteristics of Selected River Basins of the SADC Region

River Basin	Basin Area (Km^2)	River Length (Km)	Mean Annual Runoff (Mm^3/a) at River Mouth	Number of States	Basin States
Buzi	31,000	250	2,500	2	Zimbabwe, Mozambique
Cunene	106,500	1,050	5,500	2	Angola, Namibia
Cuvelai	100,000	430	Ephermeral	2	Angola, Namibia
Incomati	50,000	480	3,500	3	South Africa, Swaziland, Mozambique
Limpopo	415,000	1,750	5,500	4	Botswana, South Africa, Zimbabwe, Mozambique
Maputo	32,000	380	2,500	3	South Africa, Swaziland, Mozambique
Nile	2,800,000	6,700	86,000	10	Tanzania, Burundi, Rwanda, Kenya, Uganda, Democratic Republic of Congo, Eritrea, Ethiopia, Sudan, Egypt
Okavango	570,000	1,100	11,000	4	Angola, Namibia, Zimbabwe, Botswana
Orange	850,000	2,300	11,500	4	Lesotho, South Africa, Botswana, Namibia
Pungue	32,500	300	3,000	2	Zimbabwe, Mozambique
Ruvuma	155,500	800	15,000	3	Tanzania, Malawi, Mozambique
Save	92,500	740	7,000	2	Zimbabwe, Mozambique
Umbeluzi	5,500	200	600	2	Swaziland, Mozambique
Congo	3,800,000	4,700	1,260,000	9	Burundi, Rwanda, Central African Republic, Tanzania, Cameroon, Congo, Democratic Republic of Congo, Zambia, Angola
Zambezi	1,400,000	2,650	94,000	8	Angola, Namibia, Botswana, Zimbabwe, Zambia, Malawi, Tanzania, Mozambique

Source: Adapted from Pallet, J. (Ed.), Sharing Water in Southern Africa, 1997.

2. Terms of Reference for Articulating Roles and Formulating Guidelines for the Management of Shared Watercourse Systems

2.1 Summary

2.1.1 Purpose and Objectives

The purpose of this Terms of Reference is to outline a program of assistance to the SADC Water Sector Coordination Unit (WSCU) to help it fulfill its responsibilities regarding implementation of the Protocol on Shared Watercourse Systems. The specific objectives are to both clarify roles and responsibilities of the various river basin management institutions through adoption of bylaws; and to draft guidelines for the SADC region based on best management practices for international river systems.

This effort will help institutions better understand the essence of what needs to be done to improve transparency in basin management and how to put ideas into action. Once appropriate institutional arrangements have been agreed, guidance relating to high priority integrated basin management topics such as basin planning methods, water use and quality management, and participatory processes and conflict management will be drafted and proposed for distribution to member states by the WSCU. To achieve this objective, the primary intermediate tasks will be: completion of a review of international "best practices;" development of background papers for the application of these practices in the SADC region on a variety of topics; development of draft guidance; delivery of regional workshops; and finalization of draft guidelines which could include their formal link to Protocol implementation or some other agreed arrangement.

This activity is planned to be implemented over a period of two years. It will be carried out in three, eight-month phases. Phase I provides for an inception period with activity staffing, background analysis, organizational meetings and preliminary reporting to gain agreement on the various tasks to be undertaken. Phase II will involve reaching consensus on a regional approach to integrated basis management. During Phase III draft management guidelines will be finalized and agreed upon.

In carrying out the work to be delivered under the Terms of Reference, consultants will build upon the report of the SADC/EU Conference on the Management of Shared Watercourse Systems that took place in Maseru in May 1997. The primary recommendations from the Conference of direct relevance are the following:

- Design an appropriate institutional framework for integrated water resources management at the national and regional levels.
- Prepare joint river basin plans and regional plans to include multi-sectoral opportunities for win-win solutions and contingency plans dealing with crises and

disasters. Environmental considerations and water quality should be integral parts of these plans.

- Operationalize the concepts of "equity" and "least harm," considering the difference in contributions and demands within shared river basins.

- Social and environmental impact assessments should be mandatory and standardized within shared river basins.

- Promote the concept of demand management, and translate it into concrete policy measures and action plans.

- Develop adequate and sustainable financial arrangements for operational management.

- Encourage transparency with respect to the availability and use of water resources through the establishment of a common information base with particular emphasis on information sharing.

- Improve communication links between riparians, update and harmonize monitoring networks, facilities and data bases for water resources and water use.

- Commit to effective procedures to involve all stakeholders and communities in joint river basin plans.

- Establish effective agreements for avoiding or resolving disputes over equitable access to and sustainable use of river basins.[11]

2.1.2 Potential Limitations on the Scope and Timing of the Activity

The program of work outlined in this Terms of Reference is highly ambitious. It is important that the proposed task and implementation schedule for a two-year activity be carefully assessed and adjusted, as necessary, during the planned inception meeting. The final scope and schedule will be reflected in a workplan to emerge from that meeting.

2.1.3 Summary of Tasks

Four main tasks are envisioned—moving from (1) a review of international experience, to (2) developing a set of background papers on key topics, then to (3) consensus-building and eventually to (4) recommending appropriate institutional arrangements and guidelines for management of shared river basins. In addition to these task areas, the consultant team and regional officials and resource persons will also meet three times for planning and reporting purposes at an inception meeting, a mid-term meeting and a project completion meeting. The main elements of the four tasks are as follows:

[11]Statement of the Maseru Conference. May 21, 1997.

TASK 1. Review of Applicable International Experience

Subtask 1a Institutional arrangements for management of shared watercourse systems
Subtask 1b Background review of best practices for integrated international river basin planning
Subtask 1c Development of management options for shared watercourse systems
Subtask 1d Participatory methods and conflict management in shared watercourse systems

TASK 2. Development of Background Papers as the Basis for Workshop Series

Subtask 2a Institutional arrangements for management of shared watercourses
Subtask 2b Outlining basin planning methods
Subtask 2c Water quality and quality management
Subtask 2d Participatory processes and conflict management

TASK 3. Reaching Consensus on a Regional Approach to Managing Shared Watercourse Systems

TASK 4. Finalization of Institutional and Management Framework and Integrated Basin Management Guidelines

2.2 Detailed Terms of Reference

An inception meeting will be held to review this Terms of Reference once key staff are in place. The meeting will result in a detailed workplan incorporating any adjustments to the Terms of Reference deemed necessary. The tasks as currently envisioned are described below.

TASK 1. Review of Applicable International Experience

The objective of this task is to complete a review of international best management practices for international river systems to generate background documents. These will be used in a series of working group meetings on the topics of: (1) basin planning methods; (2) methods for integrated basin management; and, (3) participatory processes and conflict management. The background documents will be revised and improved as the result of the regional discussions.

In order to ensure direct relevance to Southern African water management realities, it is recommended that the entire effort work closely with one or more regional river basin management entities as well as the SADC structures for implementation of the Protocol. At present, it is proposed that a close working relationship be established with OKACOM, though alternative or supplemental links to Zambezi River and Orange River authorities should also be considered.

Subtask 1a Overview of institutional arrangements for management of shared watercourse systems

Under this subtask, a review and analysis of management organizations used around the world for complex international river systems will be undertaken. The review will include practices and forms of organizations comparable to SADC which provide a facilitation role; basin management organizations and river basin authorities or boards; and the role of non-governmental organizations (NGO's); universities; and other stakeholders. This review and analysis may include reference to institutional approaches used to deal with transboundary environmental issues other than water management. It will examine world experience including practices in the African context. It will include an analysis of characteristics of successful institutional arrangements and an options analysis for application to river basin management institutions included in the SADC Protocol. Further, the review will compare the strengths and weaknesses of the Protocol to similar mechanisms governing international river basin systems throughout the world. It will recommend a division of labor between the implementing bodies of the Protocol and help to develop a basis for guidance on establishing river basin management commissions and authorities. A workshop (#1 on the schedule) will be held on this subject at which a "working group" of regional experts and officials will be formed to guide the remainder of the activity.

Subtask 1b Background review of best practices for international river basin planning

i) Methods for Evaluating Water Use Optimization and Tradeoffs in Water Use

Methods for evaluating tradeoffs in water use that provide a rational basis for optimization of basin resources will be imperative to adoption of basin agreements. Such methods will assist in development of sound water allocation arrangements. They also provide a means for estimating levels of any compensation that may be appropriate between riparian countries to offset loss of benefits to one country that forfeits water use in favor of more efficient resource use by another country. Under this subtask, a review of international experience in developing and applying methods for examining tradeoffs in water use will be undertaken. The review will specifically examine the economic tradeoffs associated with irrigation, hydropower, industrial, municipal, and ecological use of basin waters. The analysis will include a description of methods for evaluating water use tradeoffs which includes relative economic values of water uses and mechanisms for examining water use optimization on the river basin level. It will also examine options for application of these approaches in the context of the SADC Protocol and provide recommendations for inclusion into guidance for application by river basin management institutions.

ii) Methods for Achieving Equity in Water Allocation

Reaching agreement on water allocation will be an inevitable part of any regional water sharing approaches. It is also one of the most sensitive issues facing river basin management institutions. This analysis will examine international experience in designing methods for acknowledging use rights and otherwise providing for equitable allocation of water and develop options that could

be included in guidance to river basin commissions operating under the SADC Protocol. It will examine the success rates associated with: using a legal basis for allocation (e.g. Helsinki rules of 1966); a needs-based approach which establishes equity for water rights; doctrine of absolute sovereignty; first in time, first in right; and methods for establishing equity through use of economic efficiency and compensation to those who give up their intended water use to higher-valued uses.

iii) Methods for Dealing with Water Quality and Resource Protection

Under this subtask, a review of international experience in establishing an international framework for agreements on water quality and resource protection will be undertaken. The analysis will include a review of: (1) international surface water quality criteria; (2) standards for environmental demand or instream flow requirements; and, (3) standards for wetland protection and other conservation criteria. The review will examine ways for international basin management institutions to prioritize the water quality problems they need to address. In addition, the review will examine world experience with water quality monitoring in the context of international agreements on water quality and basin conservation, and will consider various monitoring options including probablistic monitoring techniques which allow for trend analysis and which can be highly cost effective.[12] The analysis will devise options based on successful models adopted in other contexts that could apply to guidance developed for implementation of the SADC Protocol.

Subtask 1c Overview of management options for shared watercourse systems

Building on the outputs of 1a and 1b, a synthesis review of management practices will be conducted of: water use demand management; water quality management; and resource management in international settings. The review will examine both regulatory and incentive approaches to water resources management as well as traditional regulatory approaches such as: requirements for limitations on water rights and water quality treatment standards; economic incentives such as water pricing, user fees, taxes, and penalties; and innovative approaches to pollution prevention, water reuse, wetland conservation practices, and demand management practices which protect stream flows. The analysis will devise options for best management practices based on international experience in other shared watercourse systems that can be applicable to SADC Protocol implementation.

Subtask 1d Participatory methods and conflict management in shared watercourse systems

i) Participatory Methods

Broad stakeholder participation in river basin management is a high priority for all of the SADC member states. It is also a widely recognized complement to technical and economic analyses for building a constituency for improved river basin management and for leveraging governmental and non-governmental financial resources within a given basin. The analysis will review world

[12]Probablistic monitoring protocols are based on statistically random sampling designs. Because of this, samples are considered representative and reflect conditions of the water body at the time the sample is taken and can be used to assess trends in the condition of the water body over time.

experience relating to participatory processes in river basin management both at the national and international levels. It will provide an analysis of the impacts participation can have on moving a management agenda forward and provide options for stakeholder participation at the various levels of river basin management called for in the SADC Protocol. Particular attention will be paid to approaches appropriate to SADC conditions.

ii) Methods for Dispute Resolution

This analysis will cover successful methods for resolving issues that can arise in connection with management of complex international river systems. It will review practices for dispute resolution, including mediation/negotiation, arbitration, and legal approaches. The focus here, however, will be on methods for resolving potential conflicts at the river basin commission level and will include consideration of interest-based bargaining such as that developed by the Harvard Negotiation Project as well as other natural resources mediation efforts. The analysis will provide options for application in relation to the Protocol, outlining steps for negotiation on the Commission level before issues are forwarded to the highest levels of the SADC organization for resolution.

TASK 2: Development of Background Papers in Preparation for Workshop Series

A set of comprehensive background papers will evolve from the analyses enunciated above (related subtasks under Task 1 are shown in parentheses). These papers will be written in preparation for a series of workshops. Background papers drawn from experience in Africa and other international settings will clearly outline major policy issues and identify successful models which are applicable to the SADC region. These would include papers outlining the current and potential application of recommended roles and responsibilities to the Obavango River Basin and other shared watercourse systems in the SADC region, as appropriate. Sets of draft guidance documents also will be prepared in advance of each of the workshops relating to each particular topic. There will be two workshops making use of the background papers. The first will center on institutional arrangements, roles and responsibilities for shared watercourse management. The primary background document will be that prepared under Task 1, Subtask 1a, though work underway under Subtasks 1b 1d will also be relevant. A second workshop will review international experience with basin planning, water quantity and quality management, public participation and conflict resolution. The preliminary list of background papers and guidance document topics cover the following topics:

Subtask 2a Institutional Arrangements for Management of Shared Watercourses (based on Subtask 1a)

a) Identification of Protocol terms which need definition and options for definition of those terms;

b) Options for defining roles and responsibilities for implementing a regional framework for shared watercourse systems; and

c) Elements of successful river basin management commissions.

Subtask 2b Outlining Basin Planning Methods (based on Subtask 1b)

a) Methods for evaluating of tradeoffs in water use and optimization of use of shared water resources;

b) Options for water allocation among countries of international river systems; and

c) Methods and options for prioritizing water quality issues and development of international water quality standards and water quality monitoring of international river systems.

Subtask 2c Water Quality and Quality Management (based on Subtask 1c)

a) Water quantity management options; and

b) Management options for protection of water quality.

Subtask 2d Participatory Processes and Conflict Management (based on Subtask 1d)

a) Stakeholder participation in integrated basin management of international river systems; and

b) Conflict management: problem-solving and dispute resolution in the management of shared watercourses.

TASK 3. Reaching Consensus on a Regional Approach

By involving key parties from the start of this effort and building on good relations established during the Protocol review process, the consensus-building exercise actually begins from day one of the effort. However, the more formal consensus-building phase follows Tasks 1 and 2 and starts with a focus on a defining terms of the Protocol, developing institutional arrangements for implementation of the Protocol, and designing a management framework (an agreed set of institutional arrangements, information sharing protocols, optimization methods and other measures). These results will be accomplished through efforts of the "working group" established at the first workshop on institutional arrangements to draft guidelines and gain acceptance among a broader audience. From the first workshop, participants will come away with an idea of the range of options available to them for establishing institutional arrangements and a management framework for the Protocol's implementation. After the initial meeting, the working group will meet at least every three months over the remainder of the activity course to finalize and disseminate information on institutional arrangements and to draft guidelines, with regular communications between meetings to be facilitated by the Team Leader. A mid-term meeting will be held to review major elements of the emerging agreed institutional and management framework and present it to a broader audience for consensus-building. A third workshop will be held to disseminate the recommended institutional arrangements. This will take

into account the comments received at the mid-term meeting as well as further definition of national and regional roles and responsibilities based on consultations in the region. One or more of these meetings may be held in conjunction with the semi-annual sessions of the SADC WRTC to ensure coordination with other water sector activities.

TASK 4. Finalization of Institutional and Management Framework and Integrated Basin Management Guidelines

Under this final task the sets of guidance documents will be completed for official review and adoption. This will entail a joint effort of the expert team and the working group to bring together stakeholders to deal with unresolved issues. It also ensures finalization and recommendation to SADC authorities of each of the draft guidelines. A specific application of the guidelines to the Okavango River Basin on a pilot basis (and/or other shared watercourses) will be developed as a part of this task. Comments and suggestions from stakeholders will be incorporated into these draft guidelines while assessment of governmental and other organizational buy-in to the guidance will be completed. This effort will make use of working groups and subtask groups to resolve areas where consensus needs to be reached before finalization. A fourth workshop will be held to review draft guidelines and to finalize and disseminate recommendations regarding operational norms governing the management of shared watercourses in the SADC region. Follow up will also include a thorough review of the option to annex the guidance documents to the SADC Protocol as well as other alternatives regarding the institutionalization of approaches included in the guidelines. Final documentation will be presented and recommended follow-on steps reviewed at an Activity Completion Meeting held near the end of the two-year period.

3. Deliverables

1. Workplan that outlines focus, activities, counterpart relationships, and schedule consistent with the Terms of Reference will be required within two months of initiation of activity; mid-term and final reports will summarize accomplishments.

2. Quarterly progress reports to be submitted to USAID/RSCA and the WSCU (excepting the periods coinciding with the mid-term and final reports).

3. Summary report on an analysis of international best practices related to management of complex international river systems.

4. A minimum of four draft guidance documents related to implementation of the SADC Protocol on shared watercourses.

5. Recommended application of the institutional arrangements and guidelines to the Okavango River Basin (and/or other basins).

6. A minimum of four regional working group meetings and associated workshops with workshop reports.

7. Final draft recommendations concerning the articulation of institutional roles in the management of SADC shared watercourse systems.

8. Final draft guidelines on integrated river basin management practices to be provided to the SADC Water Sector Coordinating Unit.

4. Implementation Plan

4.1 Proposed Counterpart Approach

An appropriate counterpart within the SADC region has yet to be identified. This may be a SADC entity, a regional univeristy, or some other organization that should benefit from and support the activity. A close working relationship with OKACOM is expected for the pilot work on the Okavango Basin.

4.2 Proposed Work Schedule

The activity will be implemented in three phases of approximately eight months each, with specified outputs also expected at the end of the first year (see Figure 1). The phasing will be as follows:

1) ***Review of Applicable International Experience:*** Review of international best practices and their discussion in the region (8 months).

2) ***Reaching Consensus on a Regional Approach:*** Preliminary work on guidelines and workshops to get feedback from all key parties (8 months).

3) ***Finalization of Guidelines:*** Preparation and final review of guidelines for improved water management in the region (8 months).

Tasks 1 and 2 fall under Phase I, while Tasks 3 and 4 fall respectively, under Phases II and III; each phase is anticipated to be eight months in length. In addition, a set of milestones is also expected to be passed at the mid-way point of the two-year activity. After 12 months, the team is expected to have produced for the WSCU: (1) a preliminary set of guidelines for basin management; and (2) initial recommendations concerning appropriate institutional arrangements to further improve management of shared water courses in the SADC region. These outputs will be discussed with WSCU staff at the mid-term meeting that will also be used to reach agreement on plans for the second year of the activity.

Other aspects of the work schedule—especially key meetings—are depicted in Figure 1. All four workshops will be of five days duration at the most (including travel time), and adequate materials and information concerning format and objectives will be distributed in advance to ensure productive meetings. The target audiences will vary according to the topic, but they will include a broad spectrum of stakeholders including government representatives, non-governmental organizations, environmental groups, community leaders and technical specialists. Maximum participation in each workshop will be 40 persons. The inception, mid-term and final meetings will involve fewer persons and primarily those most directly involved with activity implementation.

A more precise timeline will be developed as part of the activity workplan and adjusted, as necessary, during the mid-term planning meeting.

4.3 Proposed Staffing

The activity is designed to team foreign and local experts to facilitate capacity building in the specific technical areas. A Team Leader located in Botswana will be paired with a Deputy Team Leader located in Maseru. Though every effort should be made to use expertise from the region where available, it is envisioned that foreign and local short-term consultants in the various professional areas would also be teamed to carry out specific tasks in relation to the project. Given uncertainities concerning the availability of key regional and national counterparts to participate in this activity at the pace currently outlined, final decisions on the full staffing of the activity should await agreement on a work plan. The activity implementation structure for supporting the terms of reference for articulating roles and responsibilities and for developing guidelines for implementation of the SADC Protocol on the management of shared watercourses is outlined below.

4.3.1 Team Leader/Water Resources Advisor

The Team Leader will be located in Botswana and will serve as the primary liaison between this activity and USAID/RSCA. The Team Leader will be responsible for overall coordination of this activity and will provide both administrative and technical direction. The Team Leader must have prior experience in management of an interdisciplinary and integrated water resources project. They will have excellent skills in both written and oral communication and be able to facilitate discussions and exchange of information and must work well with local counterparts to obtain buy-in to drafted guidelines. In addition, the Team Leader must be fully capable of understanding both technical aspects of the project and possess the ability to manage, coordinate and facilitate activities. Prior experience in managing USAID funded activities is preferred. The individual should have 10 years of relevant experience and education (MA degree minimum, preferably PhD). Estimated Level of Effort: 24 person months.

4.3.2 Deputy Team Leader/Water Resources Specialist

The Deputy Team leader, located in Maseru, will serve as the contact in Maseru and will ensure project activities are well-integrated with the work of the WSCU. The Deputy Team Leader will also coordinate closely with the Team Leader in Botswana in executing the Terms of Reference. They must have a minimum of eight years of experience related to water resources management and possess excellent oral and written communication skills. Experience must demonstrate ability to manage multi-faceted interdisciplinary water resources with an emphasis on international river system management (M.A. degree minimum, preferably PhD.) Estimated Level of Effort: 24 person months.

Figure 1. Proposed Work Schedule With Associated Outputs

Principal Activities and Outputs	**Phase I: Review of Applicable International Experience**								**Phase II: Reaching Consensus on a Regional Approach**								**Phase III: Finalization of Guidelines**							
Month:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1. Inception Meeting																								
2. Workshop #1 to Review Institutional Arrangements																								
3. Workshop #2 on International Experience (basin planning, water use and quality management, participation and conflict resolution)																								
4. Mid-term Meeting: First draft Guidelines and Institutional Recommendations																								
5. Workshop #3 on Dissemination of Institutional Arrangements																								
6. Workshop #4 on Draft Guidelines																								
7. Activity Conclusion Meeting and Final Report																								

4.3.3 Program Specialist

The Program Specialist will be located in Lesotho. They will assist the Deputy Team Leader with technical administration of this activity. The Program Specialist will be responsible for coordinating with local counterparts and consultants with regard to execution of the technical tasks associated with this activity. In addition, the Program Specialist will work with WSCU to assist with the organization of conferences, workshop and meetings; will assist with the development of background papers and draft guidance; and will support dissemination activities in relation to this activity. The Program Specialist must have a minimum of five years of related experience, preferably in the water sector field (M.A. degree minimum). Estimated Level of Effort: 24 person months.

4.3.4 Program Administrator

The Program Administrator will be located in Botswana and will be responsible for overall administration of the activity. They will be responsible for human resources management, ensuring appropriate USAID approvals, and ensuring smooth day to day project operations. They must have previous administrative experience, preferably with USAID projects. They must have a minimum of two years experience and a minimum of a Bachelor's degree. Estimated Level of Effort: 24 person months.

4.3.5 Accountant

The Accountant will work under the direction of the Program Administrator and will be located in Botswana. They will be responsible for local payroll, accounting of activity expenses according to USAID guidelines, and for preparing invoices for submission to USAID. They must be familiar with financial data base systems. The Accountant must have a minimum of three years accounting experience with a minimum education at the Bachelors degree level. Estimated Level of Effort: 24 person months.

4.3.6 Natural Resources Economists

The Natural Resources Economists will work as part of a team of experts and will have expertise focusing on water resources. They will be responsible for the development of background papers, draft guidance, and delivery of workshops related to valuation of water uses and the optimization of water use within a particular basin. In addition, they will provide models for the use of pricing mechanisms to improve water use efficiency. The individuals will have experience with basin-level planning exercises which evaluate the tradeoffs in water use and take into account economic values and benefits associated with various water uses. They should have 8-10 years of relevant experience and education (M.S. degree minimum, preferably Ph.D). Estimated Level of Effort: 4 person months foreign, 4 person months local.

4.3.7 Water Resources Specialists

The Water Resources Specialists will work as part of a team of experts and will be responsible for developing the background papers, draft guidance, and delivering workshop sessions related

to optimization of water use. They will have expertise in water use optimization and methods for designing fair and equitable water allocation scenarios for international river basins. The individuals should have 8-10 years experience in water supply optimization and allocation with relevant education in the field of engineering or other related fields (MS minimum, PhD preferred). Estimated Level of Effort: 2 person months foreign, 2 person months local.

4.3.8 Water Quality Specialists

Water Quality Specialists will serve as part of a team of experts and will be responsible for drafting background papers, drafting guidance, and delivering workshops related to the topic of water quality management in international river systems. Individuals will have an extensive background in the management of water quality in the integrated basin management context. They should be fully versed in development of water quality management priorities, establishment of surface water quality criteria, criteria for wetland loss mitigation and other related issues. They will have the relevant educational background, including 8-10 years of experience in the surface water quality management area. Estimated Level of Effort: 4 person months foreign; 4 person months local.

4.3.9 Water Law/Mediation Specialists

The Water Law and Mediation Specialists will work as part of a team of experts. They will be responsible for drafting background papers, development of guidance, and delivery of workshops on methods for conflict resolution. They will have an understanding of the legal basis for national and international laws related to water resources management. In addition, they must be fully versed in negotiation strategies and their application in the context of management of international river systems. Individuals should have legal/policy training with 8-10 years experience. Estimated Level of Effort: 4 person months foreign; 4 person months local.

4.3.10 Institutional Specialists

The institutional specialists will work as part of a team of experts. They will be responsible for development of background documents, draft guidance, and delivery of workshops related to institutional arrangements for management of international river systems, generally, and in working with southern African counterparts to devise a system applicable to the implementation of the SADC Protocol. In addition, They must be fully conversant with participatory methods as applied in management of shared water courses and have the ability to make useful recommendations for application of such methods with regard to implementation of the SADC Protocol. They must have previous experience with organization of institutional aspects of international water management with demonstrated capability to apply lessons learned in other international settings to the southern African context. Estimated Level of Effort: 4 person months, foreign; 4 person months local.

4.3.11 Legal Specialist

The legal specialist will participate as a team of experts to assist in the development of the legal basis of all aspects of the draft guidelines. They will review guidelines for consistency with the SADC Protocol and other relevant international conventions and treaties. Prior experience in the

development of the SADC Protocol is preferred. Estimated Level of Effort: 4 person months local.

4.3.12 Conference Organization Specialist

The Conference Organization Specialist will be responsible for coordinating the organization of conferences and workshops associated with this activity including selection of venue sites, arranging accommodations and meals, preparation of conference materials, assisting with advance invitations, and supporting travel and logistics. They must have prior similar experience. Estimated level of effort: 14 person months, local.